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A Venomous Snakebite Absurdity . . . . . Ray Pawley 49

Some Fun Observations of Gophersnakes (*Pituophis catenifer*) Near Tucson, Arizona—Part 1 . . . . . Roger A. Repp 52

Herpetology 2021 58

Minutes of the CHS Board Meeting, March 19, 2021 59

Advertisements 60

New CHS Members This Month 60

Cover: Gophersnake, *Pituophis catenifer*, in a defensive posture, 14 April 2019, Galiuro Mountains, Cochise County, Arizona. Photograph by Roger A. Repp.

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A Venomous Snakebite Absurdity

Ray Pawley
raypawley@pvtnetworks.net

During the 1960s when I was chairman of the Antivenin Committee for the American Association of Zoological Parks and Aquariums, I was on call 24/7 to expedite antivenin from any U.S. zoo to a hospital anywhere in the country to treat a victim (usually a zoo colleague) who had been bitten by an exotic species of venomous snake. I maintained a complete inventory of antivenins held in zoos, laboratories and poison control centers across the country so that in an emergency, the proper species-specific antivenin could be sent immediately from point of origin to its destination. Back-up antivenin from Brookfield Zoo's inventory could be sent if needed since Chicago's airports and nearby airbases were centrally located in the U.S. In some cases, a fighter aircraft, authorized by the Governor would dash to Chicago's O'Hare field where the life-saving parcel would be handed off to the pilot who would then make the delivery anywhere in the US, typically within two to four hours.

After the loss of an acquaintance who was bitten by a cobra at a reptile park in Louisiana in my younger years due to institutional mishandling of antivenin transferal, I had become an accomplished zealot in the practice of forwarding antivenin across the country.

Due to an upsurge of research in snake venoms in the 1970s by researchers and herpetologists, a coalition of the three major national herpetological societies decided to invite the curators of three major zoos (San Diego, New York's Bronx and Chicago's Brookfield) to come to their joint annual conference. Each would report to the membership on a particularly interesting snakebite case. The industry wanted their colleagues to understand the real hazards involved when working with venomous snakes. The report that I gave follows.

§§§§§§§§§§

I received a telephone call in my zoo office and the male voice asked me if a mamba bite is a serious matter. Believing this to be a simple academic question, I replied in the affirmative, adding that because they are relatives of cobras, mortality percentages from mamba bites run quite high. He told me he was curious because he has a collection of highly venomous snakes and his mamba had bitten him.

For an instant, the shock sent my brain into warp-drive as I processed what I was just told! Then, the big question: Why are we still discussing this on the phone? Quick action was needed. I told the caller that he needed to go to an emergency room immediately! I needed to know what hospital he would be going to, so that I could send mamba antiserum to the attending physician. In short, this call had to end at once. Any discussion could resume after his arrival at the emergency room.

I told him that I also needed to know how much time had elapsed since the bite happened. His answer, "Last month," sent another shock to my brain. As I was processing this update, he asked if he were still in danger from the snakebite. Since the venom's action from any venomous snake is typically exhausted in 36 hours, I responded that he was long since out of danger. I also informed him that following a venomous bite there are often attendant problems such as gangrene, nerve damage or other maladies caused by such an injury that may require medical attention in the weeks or months following a successful treatment.

I explained to him that he obviously took a dry bite. When a venomous snake delivers a bite, the snake decides whether to inject venom or not. When biting its prey, venom will be injected at once, but in some cases, when the bite is defensive, there is a slim chance that venom will not be injected, resulting in a "dry" bite.

There was yet another shock. He reflected that he had been bitten by the same snake three or four months before. He said that he had waited to see if there was any reaction but there had been none. In response, I could only emphasize how lucky he was. Two dry bites two months apart by one of the most notorious venomous snakes in the world is the equivalent of dodging two bullets or two lightning strikes.

As I moved to end the call, he had yet one more shocker to drop on me. He declared his belief that the two bites he had received were not dry. Instead, he told me he was convinced that he was immune to the venom of all the different species of venomous snakes! I explained to him that all venomous snake species have different venom recipes and that (a) there was no such thing as a natural immunity to venomous snakebite and (b) even if he were immune to the venom of one species of venomous snake, there would be little to no crossover protection from venom of another species. After attempting to explain to him how his immunity notion was pure myth and had no factual scientific basis, he thanked me for my time, reiterating once again, with a whispered fervor, that he was immune to venomous snakebite.

Incidentally, on the topic of immunity to venomous snakebite, only one person, the late Bill Haast, whose business was extracting venom from king cobras and other species, had built up his immunity with injections of king cobra venom, starting with minimal dosages and increasing the amount until he had acquired hyper-immunity. Nevertheless, in spite of his immunity, a king cobra bite would leave him suffering to a greater or lesser degree.

On reflection, I was amazed at how many bizarre surprises, one following the other, had emerged in our brief conversation! However, the most astonishing revelation was his adamant, religious-like conviction that he was unique in all of the human race by being singularly and naturally immune to venomous snakebite! His ability as a snake-oil salesman in peddling this medical untruth certainly worked on himself—which is a violation of a basic snake-oil salesman's pitch: Do not fall victim to your own fabrications! If he were peddling life-threatening false truths based on ignorance, he could be a hazard to a lot of people's lives!

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Before going on, I will insert a bit of background about the West African green mamba. Of the four species of this large, slender "stretch" version of the cobra family, the West African greens are particularly popular in zoo reptile exhibits. Much larger than the similar-shaped, nonvenomous coachwhips and racers in this country, West African mambas are a beautiful shade of green made all the more spectacular because their large body scales are edged with a thin black hairline. They are remarkably easy to exhibit, almost like hanging a picture in a choice location on a wall. Simply position a comfortable branch at the proper height in an exhibit and a West African green mamba will lead a contented life, "wowing" the public with its spectacular appearance.

Mambas have a reputation for attacking or chasing people. Based on first-hand experiences by N'Jemps snake collectors near Lake Baringo in Kenya, mambas do not attack people although the snake's intentions may be misinterpreted.

For example, In the Central African forests, mambas usually have a "home" tree that they occupy and venture away from when hunger impels them to leave to search for a meal such as a small rodent or bird. However, if a human is walking along a path through the forest and sees a mamba prowling about in some bushes, the mamba might suddenly realize that a human interloper is between itself and its home tree. Instantly, the snake may make a desperate dash for the safety of its home tree even if the snake must quickly speed between the human's (by now) dancing legs. The human, not realizing that he/she was obstructing the mamba's right-of-way to its home tree, will breathlessly recount the story as a narrow escape from an attack by a mamba. In fact, here in the States, for much the same reason, harmless coachwhips and racers have a similar but equally undeserved reputation for chasing people.

If mambas were intent on attacking humans, I would probably not be here. One morning when I was checking up on the job that a new keeper had done when cleaning enclosures, I glanced up through the exhibit glass at the overhead trapdoor in the ceiling of the mamba exhibit, eight feet above the floor. I was horrified to see that the trap door had been left wide open. Worse, although the keeper had finished servicing the exhibit only moments before, the mamba was gone. It was loose in the service area which was a tangle of electrical conduits, HVAC and water pipes, and mambas can travel fast.

With a sense of dread, I carefully opened the door to the service area. The snake, which could have been anywhere and at any level in that morass, was not to be seen. Moreover, the snake posed a threat not only to any keepers entering the area, but to the general public as well. Its escape would be a major disaster requiring that the building if not the entire zoo be closed.

With two snake hooks in hand, I climbed a narrow ladder to an equally narrow catwalk, from which I could look down through the trapdoor into the snake's exhibit, which was now empty. Leaning forward on the cage top, I looked across at the many hiding places available to the quick and agile mamba, while at the same time trying to assemble a plan. Squinting to peer into some of the dim recesses, I noticed a flickering movement near my left hand. Glancing down, I saw the mamba! Because I had been looking toward more distant places, I had completely overlooked what was up close. The snake, after leaving its enclosure was so complacent that it had looped itself into a casual resting coil only 2 feet to the left of the trapdoor. My hand was only a foot from the snake, placing me well within the mamba's striking range and there was no place to back up on the catwalk. This was no time to give way to the luxury of fear. Remarkably, the tongue-flicks appeared to betray casual and almost mild curiosity rather than nervousness—at least so far. Easing my hand away from the snake, I simultaneously slid the business end of the snake hook gently under the Mamba's body, spanning three loop segments. Slowly I lifted her and judging from another tongue-flick, the snake apparently saw no reason to object. I eased the mamba over the porthole, then lowered her down into her home quarters. Once in the exhibit space, her next tongue-flick seemed to reassure the snake that she was back in her home tree. Of course, at any time during the transfer, the snake could have dashed up the snake hook and up my arm. However, I was prepared to instantly release the hook and let the snake fall further into its exhibit. That was why I brought two snake hooks—if necessary, I could "give" the hook to the snake and I still had a backup. I closed the trapdoor and then with weak knees sat down on the catwalk to sweat. Clearly, if the snake had been intent on delivering a venomous bite, I would have quickly been its victim. Except for seizing their food, venomous snakes, including mambas, are not programmed to aggressively attack an intruder. Their venom, a product of modified saliva glands, is for immobilizing prey.

On the topic of dry bites, these can happen, depending on the decision by the striking snake to inject or not inject. Two years later, the same West African green mamba had finished devouring its meal of six mice and wanted a seventh mouse, which was being swallowed by its smaller cagemate, a ball python about half the mamba's length. The mamba seized the mouse in a vain attempt to tug the meal free but the python hung on, and continued to relentlessly swallow its food. Ultimately, the mamba was forced to relinquish the food to the python. After a few seconds the mamba dashed to the python, buried its fangs into the top of the python's head, and chewed. Never had I seen such an event—a snake biting another creature out of what appeared to be pure resentment or frustration! The python, meanwhile simply kept swallowing its meal, ignoring the mamba's attack. I was sure that the python would be dead within a few hours due to mamba envenomation. Remarkably, when I checked the next morning, the ball python was quietly coiled and digesting its meal. Conclusion? The mamba, in spite of taking out its frustrations on the small python, had in fact delivered a dry bite.

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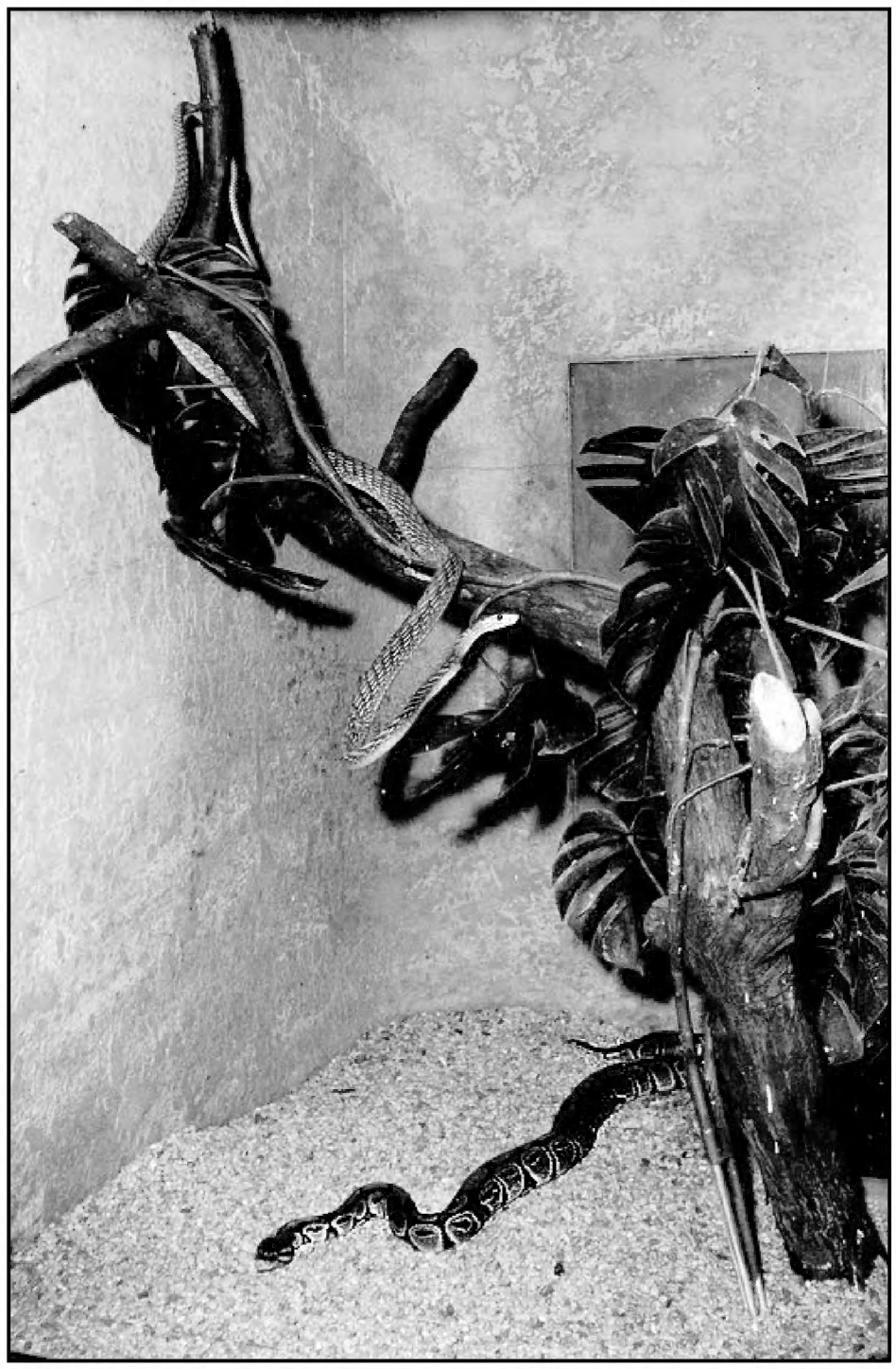
Now the conclusion of the story: Returning from lunch on a warm afternoon, I saw a car parked at the service door of the reptile house where a woman was hastily off-loading plastic boxes with colorful, well-kept venomous snakes from the trunk of her car. She was stacking the enclosures neatly beside the service door. Approaching her, I asked what she was doing since



Tall enclosures enabled the opportunity to exhibit more than one species per exhibit, many of them pioneered at Brookfield Zoo (Pawley, 1967, 1971). This green mamba and ball python combination accounted for the event described in the article. Photograph by Ray Pawley.

the zoo does not accept animal donations without a formal protocol. She was obviously distraught and apologetic as she introduced herself. She explained that she was the lady friend of the man I had talked with, who believed that he was immune to venomous snakes.

She implored me to accept these several highly venomous snakes because the man with whom I had spoken some months ago, was giving up his entire collection. When I asked for an explanation, she began by explaining that he was a third-generation scion of a wealthy Chicago family in the manufacturing business. He had a dislike for the family business and because he was wealthy, he could indulge his favorite pursuit of becoming a highly proficient professional race car driver, and had driven most of the famous tracks across the country. She said that he had become bored with racing, and then discovered the thrill of keeping venomous snakes. She said that she had been entirely opposed to his racing activities due to the dangers involved. However, when he explained to her that he was immune to snakebite she accepted that his venomous snake hobby was much safer than driving racing cars.

She went on, telling me that two weeks earlier, he was bitten in the finger by a baby tropical rattlesnake. This time he almost died! He was therefore giving up his snakes and wanted to donate them to the zoo in appreciation for the discussion we had. He had plans to go back to driving race cars because it was much safer—if his recently withered finger and amputated part of his hand would permit.

On reflection, once again, we can see that neither myth nor wishful thinking can stand up to scientific fact.

As stated before, this report was one of three that we curators delivered to a rapt academic audience, to which we intended to impart sobering "take home" messages. However, because all three of our cases were such bizarre examples of victim absurdity, we had unintendedly created a sequence of comedies at which the audience laughed with much amusement. Because this event of the joint conference had fallen so far short of its intended purpose, it was never again repeated!

Postscript

Rethinking the entire experience, I have wondered if the victim had begun to have some doubts about his immunity to snake venom and decided to put his conviction to the test. To that end, and in his mind, he would need to let himself be bitten by a venomous snake. He might have decided that he would exercise maximum caution, however, and select a baby venomous snake for this test, so that he could, mistakenly, exercise full control if the experiment went wrong and he was venom-susceptible after all. Since he barely survived, the result was glaringly clear. He would then have had two take-away messages: (1) He was not immune to venomous snakebite after all; (2) he was lucky that the mamba had spared him by delivering not just one dry bite, but two!

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Some Fun Observations of Gophersnakes (*Pituophis catenifer*) Near Tucson, Arizona—Part 1

Roger A. Repp
9044 N. Valgrind Lane
Tucson, AZ 85743
repproger22@gmail.com

1. Playing kissy-face with a Gophersnake

Jonathan's truck joined the impressive parade of vehicles, and the dusty, sorry-looking procession issued into the bowels of the canyon. We traveled a distance of about 200 meters, when the lead vehicle came to a halt. Doors began opening, and a throng of people encircled the front of the parade. After devoting much thought to this unexpected occasion, it was determined that they must have found something. The occupants of the unwanted fourth vehicle also encircled General Titcomb's chariot [Allison Titcomb was the "Field Trip Coordinator," but that title rapidly was dropped in favor of the more respectful "General Titcomb."] Dennis was proudly displaying a four foot long, thick-as-my-wrist Gophersnake, which had dumbly chosen to cross the road in front of us. A long period of admiring and photographing the hefty beast transpired, during which I started to return to my vehicle. As soon as my back was turned, the snake took it upon itself to launch a strike at an unwary participant of the field trip. The strike, I am told, was delivered like a Mike Tyson punch, and caught the hapless herper right on the kisser. ***Whop****! "Take that, geek! Get in my face again and I'll give you another!" It is a great source of consternation for this author that he didn't witness this herp-to-human interaction. But he did hustle back in time to observe the ebb and flow of blood droplets issuing from a dozen different entrance wounds on the upper lip area of the bitee. After an examination of the poor snake's mouth parts, the attending vet ascertained that the snake had suffered no damage. (Although there is no way to determine the psychological ramifications to a Gophersnake who has just laid a lip lock on a herper). The snake was released without further fanfare, and the bitee had to endure some close-quarter photography of her upper lip. The entertainment value of this incident was enough to carry us all well through both days of the trip.*

Figure 1. A *dandy* Gophersnake (*Pituophis catenifer*) being held by the 5 foot 3 inch tall Jamara Tucker. This specimen measured roughly seven feet long. See text for further details. Image by Dennis Caldwell.

Yup! Sympathy is only a word found somewhere between shit and syphilis in the dictionary when somebody suffers such a fate in front of a bunch of herpers. The above paragraph was adapted from an account I wrote of an official Tucson Herpetological Society (THS) field trip (Repp, 1996), in which I felt compelled to minimize what happened there. And in the spirit of trying to maintain unity with the THS board of directors, I left the name of the bitee out—lest she suffer even *more* ridicule. Right after bitee "Gay" received the blow, she lashed out at the snake's handler for not properly restraining it. Before poor Dennis had a chance to retort, Gay's close friend Dave stepped in to the rescue. He told her, in no uncertain terms, to shut up. He went on to elaborate that she was always getting in everybody's space, and needed to learn to back off. In his estimation, she deserved the fat lip. In other words: "Bang! Bang! He shot his baby down." Yehaw! What a *helluva* way to start a field trip!

While the reader marvels over what kind of idiot suffers such a ludicrous fate, we move on to 1 May 2004. Pamela and Gene Bacon—my niece and nephew-in-law—were visiting me. Having grown up with Pamela, (who is only ten years younger than me), I of course knew and loved her well. For whatever reason, she has always loved me back. Perhaps a bond of sorts was established back when my younger brother Ron and I would take turns holding her down while passing gas in her face? But Gene was new blood to me, and I was uncertain as to whether or not I should like the man who stole a favored niece away from me. But he won my heart when he found back-to-back Gophersnakes within 13 minutes of each other while the three of us were radio-tracking rattlesnakes together. He found the first one minutes before we tracked a rattlesnake down, and the second moments after the data had been inscribed. The two snakes were within 20 feet of each other. Both snakes were large adults that were pushing five feet in length. We could not resist handling them. The first, which was deemed a male, was passed from hand to hand. During the process of sexing it, I noticed some minor scarring on a few of the belly scutes just anterior to the tail. When Gene found the second snake, it was so identical in appearance to the first that I thought he might have found the same one twice. With this in mind, I carelessly hefted the second snake high above my head, noted the shorter tail that the females exhibit, and then spent *far* too much time admiring the flawless belly scales on this lady. And then, without any warning whatsoever, death from above was delivered by that snake. And I am telling you that strike was delivered like a Mike Tyson punch, and caught this hapless herper right on the kisser. In other words: ***Whop!*** *"Take that, geek! Get in my face again and I'll give you another!"* I was told by my two witnesses, who were paying rapt attention, that the blow actually knocked my head back. That snake hit me so hard that I actually had to peel my upper lip off my front teeth! Blood was gushing both inside and outside of my mouth, down my chin, all over my shirt, to my pants and the ground at my feet. And of course, I had to pretend that it didn't hurt. "Are you okay?" Pam inquired, her wide-eyed, mortified expression reflecting genuine concern. Well, I

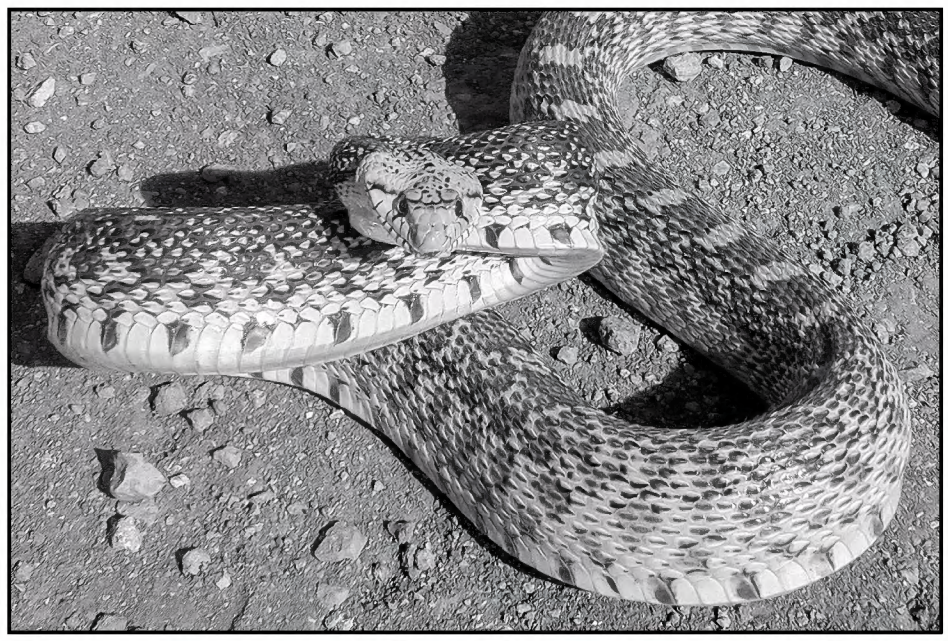

Figure 2. Aroused Gophersnake in defensive posture. See also the Gophersnake on the cover, which is the same snake. Would anyone care to try to steal a kiss from this one? See text for details. Image by the author,

was *far* from okay, but instead found myself saying: "Ho-hum. No worries, favored niece of mine. It probably looks worse than it is." In closing the books on this event, I feel inclined to say that it was all *much* more fun when it happened to Gay. And despite what any New Age fruitcakes might have to say about karma, there was no reason this had to happen. Life can be so unfair! Meanwhile, Figure 2 might serve to remind us *all* of what we're dealing with when we speak of the attitude of a Gophersnake (*Pituophis catenifer*). (The same *stunning* Gophersnake is also on the cover of this issue). Most have rather easy-going temperaments, but when aroused, they will not hesitate to bite.

2. Let's call them "PICA"

The Latin genus and species name for the Gophersnake is *Pituophis catenifer.* We will use the trick that is often used by biologists nationwide for the remainder of this column by combining the first two letters of the genus with the first two letters of the species. We then capitalize all four letters, and un-italicize them. By doing so, we create the word PICA, and eliminate the ponderous process of lengthy names that I can never spell correctly until about the fourth try. And I have had entire paragraphs disappear when a bumbling Ctrl-I occurs with my numb, snakebit fingers. (Both middle fingers, and one index finger are numb and nearly useless on account of the stiff initiation fees required to join the "White Fang Club." Thanks to the loss of usage in my right index finger, I have not successfully picked my nose since the year 1991).

If PICA sounds like a real word to you, that is probably because it is. A quick search of the word "pica" using the Bing search engine revealed several definitions of the word. We will only use two for this column. The first is a medical term that is used to describe an eating disorder characterized by a tendency to eat substances that provide no nutritive value. The food substances mentioned included soil, chalk, hair and paper. (As for many other diseases, Dr. Repp here *thinks* he has a cure. How about *this* for some free medical advice: "*Stop eating that stuff—dammit*!") The second definition discussed alludes to a type of hot sauce, one of which carries the redundant trade name of "Pica Pica." One can easily get creatively carried away with this PICA stuff, as we are dealing with a snake that *does* eat hair, and *can* be spicy hot in temperament. On top of that, when you see two, it becomes a matter of "PICA! PICA!" Enough with the levity—and on to some more levity!

3. Fun with PICA vs. literature about PICA

As the title of this column implies, what I want to do with PICA in this column is to have some fun with them. One thing that is *not* fun about them is how little there is in the literature about the natural history of the PICA close to Tucson. There is an absolute avalanche of information from California, New Mexico and Texas, but as is the case with nearly *all* colubrids near Tucson, there is next to nothing in the lit about them. Rattlesnakes—yes. Colubrids—no! I could easily point fingers at the herpetologists from the University of Arizona for the shortcomings of publications about our local PICA. There were nearly three decades of silence from that institution about much more than *just* PICA. I'm convinced that part of it was apathy, and part of it was downright suppression. But I can't really point at them without having three fingers pointing right back at me. For I too could have done more than I have where the local herps are concerned.

My first step in gathering information for this column was to go to my 35mm slide collection. Where PICA is concerned, it was a logical place to go first. Everything PICA-related in my life, from 1990 to mid-2005, (*before* I went to a digital camera), is all in one place. They are all in a single three-ringed binder. Due to my involvement with creating the public outreach group for the THS in 1990, I not only have my own best PICA photographs in this binder, but also, the best 35mm slide images of perhaps a dozen other photographers. Nothing went into those slide saver sheets that wasn't thoroughly documented in terms of date, location and the name of the photographer. Upon noting that I had some *really* interesting observations about PICA in my slide library, the next step was to go to my own notes about the events that I photographed. I also went to several of the other photographers who have photos in that binder. Following that exercise, I also went to several people whom I met *after* my own entrance into the world of digital photography.

In the end, I focused on the observations of Marty Feldner, Jim Rorabaugh, and Don Swann to help me write this column. If we look at field herping as a 40-hour-per-week vocation, with 2080 hours in a year, the four of us have over 30 years combined experience with having our boots on the ground. (That 30 year number should be much higher. Rorabaugh—who has spent more time in the field than any of us—managed to utilize some fancy numeric flandickery to prove that he has only actually herped one year.) Whether the number be 30 years, or my more accurate number of 50, it gives us a yardstick of sorts to help indicate whether some events are commonly seen, or highly rare. I will be calling this group "The Tucson Four" throughout the remainder of this column.

The Tucson Four and the recently published *Snakes of Arizona*

A few months ago, I *finally* received my copy of the book *Snakes of Arizona.* To say it was long awaited would be an understatement. I *knew* there was going to be some good stuff in

there, *especially* about Arizona's colubrid snakes. My original intent was to use the Gophersnake account in *Snakes of Arizona* as my own guideline in preparing this column. I have since had a change of heart. I have decided instead to write up what the Tucson Four have seen through the years, and *only* when that is deemed complete, compare it to the Gophersnake account in *Snakes of Arizona.* The astute reader may note that, with the exception of this particular section, there is a number placed ahead of the title of each section in this column. This was done so that I could match our quiet, mostly non-published (until today) observations with those in *Snakes of Arizona*. The authors of the Gophersnake Chapter are Randy Babb, Valerie Boyarski and Joseph Mitchell. At this point, I would like to say they have done a *fine* job with their account, but I can't. **That is because I haven't read it yet!**

What I am doing with this column is writing it first, and then—and only then—will I read the PICA account in *Snakes of Arizona*. This column will then become a chapter review. How did *they* do? How did *we do?* In all fairness to the "us" side of this effort, I/we had less than two months to pull this together *They* had a *lot* more time. And I *hope* that they had a lot more sources. My only sources thus far are a few issues of the *Sonoran Herpetologist* (the THS newsletter), and a *lot* of personal communication between the Tucson Four.

4. Three huge Arizona PICAs

Figure 1 depicts the largest PICA that this author has ever seen from an Arizona location. The snake was held captive only for about one week, and then was released where it had been found. It was initially captured in the backyard of my long-time colleague Dennis Caldwell. The rough location was Sunrise Drive and Craycroft Road, in a rich-folk neighborhood in the foothills of the Catalina mountains on the far north side of Tucson. (Think bird feeders, environmentally conscious people, supplemental watering, well-spaced housing, and quiet streets as probable reasons for an individual reaching this size.) The woman in the image, Jamara Tucker, is five feet three inches tall. The one time I handled this snake, I performed the "dangle method" of measurement. I put the tip of its tail at the top of my head, the head touched the ground, and there was a good sized loop in the body. As I am six feet one inch tall, that would put this PICA at close to—if not exceeding—seven feet in length (~2134 mm).

Jerry Feldner (father of Marty), captured and kept a seven-foot-four-inch-long (2,335 mm) *monster* from the vicinity of Dynamite Road and 35th Avenue. That location is just west of the town of Happy Valley, and well to the north of Phoenix. Jerry was a good-hearted soul who often preformed public outreach, and this PICA was an ideal ambassador to the people. Marty does not have a capture date for this monster PICA. He only knows it was caught prior to 1999. When I asked if he had any images of it, he jokingly said "Why would I take a photo of a snake living in my own house?" But I trust Marty's memory, and I'd bet anything that Jerry and Marty did a better job of measuring this snake than I did with the observation related above. I have also examined a Google Earth image of the capture vicinity that Marty suggests. What I see are widely spaced

Figure 3. It appears that a leash-law was violated here. A seven-foot-long *dandy* of a Gophersnake crosses a trail in Fort Lowell Park in Tucson, while "Wallace the Wonderdog" looks warily on. The largest Gophersnakes seem to be found in upscale, semi-urban neighborhoods of Tucson and Phoenix. Image by Martin J. Feldner

houses in a rich-folk neighborhood (more supplemental watering, bird feeders etc.), abutted by extensive creosote flats to the west. The creosote flats are also doubtlessly infested with ground squirrels.

The third whopper comes our way once again from Marty, who *almost* redeems himself for not taking an image of the Happy Valley snake (Figure 3). Marty paced off the length of the snake in this image, and found it to be over seven feet long. The location of this observation is Fort Lowell Park, which is just to the south of our first observation seen in Figure 1. The park is bordered on the west side by Craycroft Road, and the east by the Rillito River. As the image clearly shows, the flood plain that comes as an accessory to any local river park is rather vast. Creosote-dominated flats are normally infested with ground squirrels—all the more so when adjacent to a city park. Once again, supplemental watering, bird feeders, rich folk and location give any nearby PICA a fighting chance at acquiring this kind of size.

While PICA in excess of six feet long can also be seen well away from Tucson, most of those from the same 2500–3000 foot elevation range as Tucson have a build more like a whipsnake.

5. Who is eating who? PICA and ground squirrels

I just wasted an hour of perfectly good writing time going through my field notes in an attempt to find the date of the observation that follows. I failed! For at least the thousandth time, I have reminded myself that I need to computerize my notes. It is burned in my brain that it happened either in late June, or early July. It most likely was witnessed at around 1100 hours, as that would be my normal return trip time from a morning of radio-tacking. The event happened less than one mile from my house, on Silver Bell Road north of Twin Peaks Road, Pinal County, Arizona. A freshly hit DOR PICA, roughly 1200 mm (~4 feet) total length, was viewed from about 100 meters away. It was on the left side of the pavement. As soon as I saw the snake, I also saw an antelope ground squirrel (likely *Ammospermophilus harrisii* [Yegads! AMHA hereafter!]) dart from the undergrowth, cross "my" lane, enter the left lane, and bite the dead PICA on the snout. Incredibly, the spunky little snake-snack then proceeded to dig its filthy claws into the pavement,

Figure 4. Go ahead—move in a little closer, verminous hairball! A round-tailed ground squirrel attempts to "count coup" with a marauding, 1.5-meter-long Gophersnake. The ground squirrels in Arizona can be carnivorous, and seem to relish playing daring games with any and all manner of snake. See text for details. Image by Martin J. Feldner.

and start to drag the dead snake across the road. The AMHA was moving backwards, tugging its family-sized meal from the left lane toward my lane. It had actually dragged the snake backwards a distance of about 12 inches (~30 cm) before an oncoming vehicle ran over the snake again. This scared the industrious little turd-knocker off the road. It scrambled across my lane and back into the undergrowth from whence it initially emerged. A steady stream of vehicles was behind the first on-coming vehicle, and the mere effort of slowing down to gawk on my part caused a parade to form behind me. At the first available opportunity, I flipped a U-turn back to see if there were any further opportunities to witness more of this encounter. Count-less U-turns later, during which time the snake got considerably flatter, I ascertained that nothing further would develop, and so continued on home. Thus endeth this observation.

The Tucson area is blessed to have another species of carniv-orous little hairball living among us. The scientific name for this one is even more harsh than AMHA. We speak of the round-tailed ground squirrel (*Xerospermophilis tereticaudus*, AKA "XETE"). Yegads again! XETE is more of a social animal than AMHA. Groups are always happy to harass a prowling snake of *any* kind, including rattlesnakes. I *must* be careful with any mention of ground squirrels in one of these columns, lest I go down the rabbit hole of dozens of observations of them attack-ing everything *but* a PICA. A favored tactic of the toothy little furballs is that once they see a prowling herp of any kind, they gather in groups to plan their mayhem. With the annoying shrill whistles that they use to communicate, they almost seem to dare each other to count coup on their victims. As Marty Feldner captured with his image in Figure 4, there is usually a brave one who dashes out of the group to snag a quick bite and retreat. The caption that goes with Figure 4 will explain some of the rest. What is just as impressive as what *can* be seen in this image is what can't. The time that the image was taken was 1125 hours. The ambient air temperature was 95 °F! (~35 °C). That pavement *had* to be scorching hot!

For my first five years of herping here, I was constantly amazed by the carnivorous antics of our local ground squirrels. Where they are concerned, *nothing* surprises me any more. Not only do they eat meat, they are also scavengers of the highest order. Both species even eat their own dead! They truly are *disgusting* little vermin. The THS website account on Gopher-snakes (Repp, 2002) has some good images of PICA *and* PICA behavior. Two of these images were taken by Phillip Brown. One of these is of a PICA constricting an XETE, and the other is of a PICA choking one down. That PICA would eat ground squirrels is such a no-brainer that I did not see fit to bother Phil for an image. What I'd *love* to see and share is an image of the opposite happening. I have thus far seen the ravenous little vermin grabbing a morsel from many DOR herps, but never a PICA. The observation of the AMHA trying to drag that dead PICA off the road is as close as I have come to that thus far. Murphy's law being what it is, I'm sure that I will get a photo op soon after this piece is published.

Regarding various other forms of squirrel, most notably rock squirrels (*Spermophilus variegatus*), I am certain that they kill all manner of snakes small enough for them to get the drop on. But I am less certain that they would eat them. I have in hand a *great* image of a PICA constricting a rock squirrel, but the event occurred in New Mexico. We will continue to play hardball with the notion of staying within Arizona throughout this column.

6: PICA ambush postures?

It is a well known fact that rattlesnakes often hunt by coiling beside places that have been recently used by their prey items. When a hapless lizard or rodent passes in front of the snake—blam! This is a form of ambush hunting. I suspect that there is not much known in this regard for PICA. (Or for *many* other colubrid species as well).

The first time that I ever saw what I'm about to describe was the evening of 12 July 1997. It happened at a place that I call "the 'winder spot." At roughly 1800 hours, I saw and photo-graphed what the reader sees in Figure 5 (left image). The PICA in this image is roughly 30 cm (~12 inches) in total length. That would make this one the size of a hatchling, but the date of 12 July is minimally one month before the hatchlings start to appear in this vicinity. It is my speculation that this particular PICA had a rough year. I made this little snake the center of my universe for the next four hours. After first noting the snake, I wandered off seeking other game, returning roughly every hour or so until I headed for home. At 2200 hours, it was still there, and appeared not to have moved so much as a muscle. Even though I had other plans the following morning, I was curious enough, and *made* time enough, to make the 40 minute drive to check on it again. I arrived at 0800 hours to find that it was still there! It still was *exactly* as I left it—lying with its snout in the entrance to the hole, its slender body trailing behind it. It would have been very interesting to know the outcome of this observation, but 0800 hours on 13 July 1997 was the last I ever saw of it. That something inside that hole was of great interest to that snake is a no-brainer conclusion. Why it didn't go inside that hole after it is the question. The reader is seeing what I saw, which was a young Gophersnake waiting patiently outside a small rodent hole for a period of 14 hours. I am calling this observation, as well the next two, ambush postures. The reader can call it what they want. The snake appeared to be waiting for something to come out of that hole.

The observation above was *not* an isolated incident. On the

Figure 5. (Left) The young Gophersnake in this image remained motionless for 14 hours outside the small rodent hole shown. Image by the author, 12 July 1997. (Center) Less than a mile from the image shown to the left, this young Gophersnake remained as shown for approximately 2 hours. Image by Martin J. Feldner, 3 June 2005 (Right) And this one, a larger and slightly older Gophersnake, held posture for roughly 10 minutes before entering the hole. Two young kangaroo rats promptly emerged from an escape hole nearby. The snake did not come out. Image by Martin J. Feldner, 21 July 2013. All three observations, as well as one more not shown, are from south-central Pinal County, Arizona.

evening of 6 November of 1997, I saw nearly the exact same thing again! Once again, it was at the 'winder spot. Once again, the snake was very young, again, roughly 30 cm (~12 inches) total length, and again, lying with its snout close to a small rodent burrow. It was first observed at 1728 hours. I visited it again at 1811 hours, and it was still there. When I went back for the last time at 1830 hours, it was gone. The hole that it was watching appeared freshly used, indicating a strong possibility that the snake finally went in. While I have images of it all—including the hole after it went in—they are very bad even by my standards. They have been excluded in order to use two better images of similar events.

The evening of 3 June 2005 was the next time something like this was observed and photographed. In other words—it happened again! Once again, it occurred at the 'winder spot. We had one hell of a party out there that night, one which Marty Feldner fortuitously attended. There were nine others there this night. The festivities began with all of us scattering about the landscape, seeking Sidewinders and whatever else might come our way. In most places that I go, ten people herping would create a massive herpetological traffic jam. But the 'winder spot is so vast that the place just seemed to swallow us. There was easily room for twenty more! At 1934 hours that evening, Marty found and photographed the young PICA depicted in the center image of Figure 6. Approximately two hours later, Marty visited it again—and it was still there! Nearly everything with this sighting matches the previous two observations. While I never actually saw this one, when we all met back at our campsite, Marty told me about it. When I began to pump him for information, he called the image up on his camera to show me. (Thank goodness for digital cameras!) He was kind enough to send it my way a few days later. I of course didn't save it properly, and had to ask for it again. Within minutes of me sending the image request, Marty responded. In a case of "radar love" for PICA, he not only sent the requested image, but also sent an image of what comes next. Let's go for it!

On 21 July 2013, at 1220 hours, (that's right—in broad daylight), Marty Feldner observed and photographed the PICA seen in the right image of Figure 5. Unlike its three counterparts already mentioned, this one was pushing one meter long, and was likely coming around to its second birthday. In other words, it was a larger, older, and more experienced snake. The event transpired in Pinal County, east of the Picacho Mountains. The snake held its posture for roughly ten minutes. For the last 20 to 30 seconds of the above ground part of this event, it began to twitch its tail—as if something inside the hole had it excited. The snake then jetted into the hole and out of sight. Shortly after, two young kangaroo rats (probably Merriam's k-rats, *Dipodomys merriami*) came dashing out of a nearby hole. The snake did not come back out. Once I again, I allow the readers to draw their own speculative conclusions to the above observations.

7. *Dig this*! An observation of a PICA excavating a hole

On 12 September 1997, my colleague Don Swann was performing wildlife surveys for the Fort Bowie National Historic Site. While I was going through my own field notes about the ambush posture stuff (Section 6 above), I found a reference to something that Don had witnessed in the Dos Cabezos Mountains (the general location of Fort Bowie.) There were a few email exchanges, and bless his busy heart, he dug deep to find what follows. The remainder of this section is devoted to that observation. The first thing that Don did was email me a PDF copy of his field notes. If ever there was a good argument in favor of documenting our finds in writing, what you are about to read is it:

"*9/12/97: 4 (page 4 for that day) Also at 1050 I observed a Gophersnake on north side of grid 2.*
Watched it for ~25 minutes and photographed it as it dug a hole, then went most of way in it. Dug with the side of its head--would reach in grab dirt and stones with crook of neck and pull out. Went in 6-8 inches. Finally, I scared it and it fled. Caught and measured it: 81 cm SVL, 14 cm tail. Female. Released."

(Back to live action again). In addition to those notes, Don took a total of twenty-five 35mm slide photographs of this event. These days, Don is a family man, as well as workaholic of the highest order. In short, he is busier than a cow's tail in fly season. Yet when he saw that he had the chance to make his observation count for something, he dropped everything to get me the images that you see in Figure 6. We met in a central location, and he entrusted me with his 35 mm slides. I took them home

Figure 6. (Left) A female Gophersnake, slightly less than 1 meter long, observed with her head outside of the hole that she has been excavating. Note the tailings from her digging efforts under her head. (Center) She dives down for more and, (Right) hooks out another load of dirt with her neck. See text for further details. Images by Donald E. Swann, Cochise County, Arizona, 12 September 1997.

and scanned them all, choosing the best three as visual aids to what he described in his notebook.

When I asked Don what he thought this PICA was doing, his answer was: "I think she was digging to remove a plugged up rodent entrance." Don earned his Master's degree monitoring rodent populations for Tonto National Park. When he speaks of rodents, he speaketh not with forked tongue. I had already mentally dismissed the other possibility, which was digging a nesting hole. The body condition of the snake, and the timing of the event, disallows a nesting scenario. The length of the snake was just shy of a meter, which would also suggest it to be sexually immature. Assuming that Don is correct with his plugged rodent hole theory, that leads us to believe that a prowling Gophersnake has a way or ways to ascertain the presence, or absence, of a rodent in a hole. Don's observation and consequent conclusion dovetails nicely with the discussion of PICA ambush postures above.

In closing this section, think of the difficulty that a snake faces when confronted with the task of digging! What the 25 images now in my digital collection show is that in 25 minutes time, that PICA had already gone half a body length down! We should not be surprised. For eons, snakes have managed ways to rise above any perceived, limbless shortcomings to not only survive but thrive!

This here is Roger Repp, signing off from Southern Arizona, where the turtles are strong, the snakes are handsome, and the lizards are above average.

Next month: PICA population trends; activity patterns; small snake/big rat; hissy fit PICAs; captive longevity; growth rate; the beer of choice for PICA; wild and captive reproduction; some heartfelt acknowledgments; and a humble, respectful review of the Gophersnake chapter in Snakes of Arizona.

Literature Cited

Babb, R., V. Boyarski and J. Mitchell. 2020. *Pituophis catenifer* Gophersnake. Pp. 302-317. *In*: A. C. Holycross and J. T. Mitchell, editors, Snakes of Arizona. Rodeo, New Mexico: ECO Publishing.

Repp, R. 1996. Brown Canyon field trip. Sonoran Herpetologist 9(11):119.

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Suggested Reading

Holycross, A. C., and J. T. Mitchell, editors. 2020. Snakes of Arizona. Rodeo, New Mexico: ECO Publishing. 836 pp.

Herpetology 2021

In this column the editorial staff presents short abstracts of herpetological articles we have found of interest. This is not an attempt to summarize all of the research papers being published; it is an attempt to increase the reader's awareness of what herpetologists have been doing and publishing. The editor assumes full responsibility for any errors or misleading statements.

BOG TURTLE NEST-SITE FIDELITY

S. W. Macey et al. [2020, Journal of Herpetology 54(3):317-324] note that to mitigate habitat loss and increase the reproductive success of threatened bog turtles (*Glyptemys muhlenbergii*), managers often improve or restore open-canopy nesting habitats within or adjacent to occupied habitat. Restoring nesting habitat, however, does not guarantee that bog turtles will use the restored habitats; inertial mechanisms such as nest-site fidelity and natal homing may prevent female bog turtles from discovering and using restored habitats for many years or even generations. The objective of this study was to improve understanding of the role behavioral inertia may play in female bog turtle nest-site selection. From 2008 to 2012, at nine fens in New York and Massachusetts, the authors compared the average distance between previous and subsequent nests with null distributions assuming no nest-site fidelity. They also assessed whether pairwise genetic relatedness of nesting females was positively associated with geographic distance between nests. Evidence was found for strong but incomplete fidelity to nesting-habitat patches within a wetland, likely driven by behavioral inertia. Individuals nesting closer together were not more closely related, and first-degree female relatives did not consistently nest within the same nesting-habitat patch, suggesting that bog turtles do not exhibit natal homing. These results suggest that bog turtle populations may be slow to respond to newly restored nesting areas because of behavior inertia. However, testing this hypothesis will require long-term monitoring of habitat-restoration efforts coupled with further investigations of bog turtle nest-site selection.

RESPONSES OF CROCODILIANS TO A DAM

Z. Campos et al. [2020, The Herpetological Journal 30(4): 215-221] report that the spillways of the Santo Antonio Hydroelectric Dam on the Madeira River in Brazilian Amazonia were closed in November 2011, inundating more than 100 km of river and reducing the annual fluctuations in water level. The authors surveyed the crocodilians in the affected area for two years before and for eight years after dam filling in order to evaluate the effects of the dam on the size structure of the population, the distribution of each species, and the detectability of individuals to interpret changes in apparent density. Their methodology was probably not appropriate to evaluate trends in population characteristics of *Paleosuchus palpebrosus* or *P. trigonatus*, but there was little evidence of an effect of the dam on the numbers of *Caiman crocodilus* and *Melanosuchus niger* in the area, and the distributions of all caiman species along the river changed only slightly after the dam was constructed. However, the proportions of small *C. crocodilus* and large *M. niger* detected in surveys increased eight years after dam filling. Despite having detectable effects on some population characteristics, the dam does not appear to represent a threat to the persistence of the species in the area if deforestation along the banks of the reservoir can be avoided.

EASTERN MILKSNAKES AT INTACT AND FRAGMENTED SITES

M. P. Maddalena et al. [2020, Copeia 108(4):847-854] note that habitat loss and fragmentation are among the greatest threats to wildlife and biodiversity. Reptiles are particularly susceptible to these threats due to high site fidelity, large home ranges, and slow movement rates. To understand behavioral responses of eastern milksnakes (*Lampropeltis triangulum*) to fragmentation, the authors compared home range size and movement rates between a fragmented habitat and an intact habitat. Additionally, they quantified road avoidance and habitat selection in the fragmented habitat. In 2015 and 2016, they collected 453 locations from 17 individuals from Rouge National Urban Park, the fragmented study area, using radio-telemetry. They compared these results to a previous study with 1,001 locations from 30 individuals at Queen's University Biological Station, the intact study area, collected from 2003 to 2004. They found that home ranges were smaller, but daily movement rate and distance-per-move were greater in the fragmented study area. They also observed that road crossings by snakes occurred less than expected, suggesting active avoidance of roads. Milksnakes in the fragmented habitat selected locations with a greater number of cover objects within open patches surrounded by high density vegetation, which is consistent with previous findings from the intact habitat. These findings suggest that eastern milksnakes benefit from heterogeneous microhabitats and an abundance of available anthropogenic or natural cover.

EFFECTS OF PREY SIZE AND FEEDING RATE ON MORPHOLOGY

M. C. Swartwout et al. [2020, Herpetologica 76(1):53-60] note that gape-limited predators, such as snakes, might rely on phenotypic plasticity to cope with variation in prey size, but experimental studies have found mixed evidence for plasticity in snake head morphology. This study sought to determine whether variation in prey size and feeding rate induce head size plasticity in northern water snakes (*Nerodia sipedon*). The authors avoided limitations of previous studies by growing all neonates to a consistent final size (400 mm snout–vent length), and uncoupling feeding rate and prey size as potential factors influencing head size through four feeding treatments: big–fast (one large prey item every week), big–slow (one large prey item every other week), small–fast (two small prey items every week), and small–slow (one small prey item every week). Snakes in fast treatments grew faster than snakes in slow treatments, but there were no strong effects of feeding rate or prey size treatments on multiple head size metrics. Females grew faster than males, however, and had longer jaw lengths at 400 mm SVL than did males. Unlike previous studies, these results do not support the presence of phenotypic plasticity in head size in *N. sipedon*, indicating that head size plasticity in snakes can be species and context specific.

IDENTIFICATION OF SHED SNAKE SKINS

T,-S. Tsai et al. [2020, Herpetological Monographs 34:178-207] note that shed skins of snakes have practical applications and can provide information on biodiversity. The authors examined shed skins or scales stripped from 53 native species of snakes from Taiwan and adjacent islands and 13 foreign species, verified the intraspecific variation of microstructures on the scales, conducted phylogenetic comparative analyses of microdermatoglyphics, and developed a guide and key to identify shed skins by scanning electron microscopy. They examined several microstructural characteristics of scales including the form and dimensions of oberhautchen cells, denticulations, microridges, nanopits, and nanochannels. Furthermore, they noted scale shape and presence or absence of rounded tubercles on the scales. The microstructures of apical (and central) regions of scales were similar to each other, but different from those on basal and lateral margins, the keel, or apical pits. The microdermatoglyphics on cranial scales (cephalic shields) differed from those on scales from other regions of the body. Those from the dorsal and dorsolateral surfaces of the body, and the dorsal surface of the tail were similar, as were those on scales from the ventral surfaces of the body and tail. For adults or juveniles, there was no significant ontogenetic variation in many microdermatoglyphic characteristics. By conducting phylogenetic mapping, the authors found that symmetrical (dorsal) scales without apical pit organs or rounded tubercles, keelless and rounded scales, flat microdermatoglyphic patterns (without longitudinal microridges), (sub)lamellate oberhautchen cells, cell borders without denticulations or with tiny and keelless denticulations, and relatively small nanopits at denticulation joints or covering cells, are likely to be plesiomorphic character states. They also examined character evolution models based on the microdermatoglyphics and their phylogenetic signals, conducted phylogenetic generalized least-squares regressions to examine the correlations among snake habitat type and the morphological traits on scales, and confirmed a hypothesis that the evolution of scale microstructures is dominated by both phylogenetic and functional (ecological) constraints. This study also indicates that scale microstructure can be used to identify snakeskin products, roadkill specimens and fragmented samples, scale remnants in predator feces, and wild snake sloughs.

Minutes of the CHS Board Meeting, March 19, 2021

A virtual meeting of the CHS board of directors via Zoom conference video/call was called to order at 7:35 P.M. on March 19, 2021. Board member John Gutierrez was absent.
Minutes of the February 12 board meeting were read and accepted.

Officers' reports

Treasurer: Rich Crowley went over the February financial reports.

Membership secretary: Mike Dloogatch reported that membership was holding even.

Sergeant-at-arms: Tom Mikosz reported that 47 people logged in for the February online meeting.

Media secretary: Stephanie Dochterman presented some analysis of our online media accounts: On Instagram we were up 54% in the last 30 days, with 50 new followers. On Facebook, activity has increased 82%, with 18 new followers. On Twitter in the last 30 days 45 engagements, with demographics at about 60% female and about 45% age 25–34.

Committee reports

Shows: Gail Oomens announced that NARBC will be held in June at the Schaumburg Convention Center. We have been contacted by the Great Midwest Pet Expo. They will be holding three shows this year, two in Iowa and one in Indiana—too far to travel Gail thinks.

Grants: Mike Dloogatch reported that this year 20 applications were received and five grants were awarded, totaling $3500.

Old business

John Archer reported that CHS website updates are still in progress.

New business

A bill proposed in the Illinois House (HB3889 - Traveling Animal Ban) would place a ban on any animal species nonnative to the U.S. being transported and then viewed by any audience. Rich Crowley urged all to contact their state representatives to let them know to vote No.

CHS banking: Mike Dloogatch moved to accept the resolution John Archer sent to the board on March 19, 2021, authorizing new treasurer Rich Crowley to sign checks, and removing former treasurer Andy Malawy as a signer. The motion passed unanimously.

John announced that the Southwest Missouri Herpetological Society is hoping to put together a virtual Midwest Herpetological Symposium later this year. They will need a lot of participation.

John suggested that we look into a computer app for keeping track of membership. Amelia Pollock volunteered to check into this.

John mentioned that he has recordings of past online meetings, but is not sure how to post them. Can we put them on Facebook or maybe create a YouTube channel to share?

The meeting adjourned at 9:05 P.M.

Respectfully submitted by recording secretary Gail Oomens

Advertisements

For sale: **highest quality frozen rodents**. I have been raising rodents for over 30 years and can supply you with the highest quality mice available in the U.S. These are always exceptionally clean and healthy with no urine odor or mixed in bedding. I feed these to my own reptile collection exclusively and so make sure they are the best available. All rodents are produced from my personal breeding colony and are fed exceptional high protein, low fat rodent diets; no dog food is ever used. Additionally, all mice are flash frozen and are separate in the bag, not frozen together. I also have ultra low shipping prices to most areas of the U.S. and can beat others shipping prices considerably. I specialize in the smaller mice sizes and currently have the following four sizes available: Small pink mice (1 day old—1 gm) , $25 /100; Large pink mice (4 to 5 days old—2 to 3 gm), $27.50 /100; Small fuzzy mice (7 to 8 days old—5 to 6 gm), $30/100; Large fuzzy mice / hoppers (10 to 12 days old—8 to 10 gm), $35/100 Contact Kelly Haller at 785-224-7291 or by e-mail at kelhal56@hotmail.com

Line ads in this publication are run free for CHS members—$2 per line for nonmembers. Any ad may be refused at the discretion of the Editor. Submit ads to mdloogatch@chicagoherp.org.

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UPCOMING MEETINGS

Until in-person meetings again become possible the Chicago Herpetological Society will be holding monthly general meetings online via Zoom webinar. A notification will be sent by email to all members who have supplied us with an email address. As has been our custom for over 50 years, the meetings will be held on the last Wednesday evening of each month. The April webinar is scheduled for Wednesday, April 28, at 7:30 P.M. Chicago time. **Sarah Lamar**, a Ph.D. candidate at Victoria University of Wellington in New Zealand will speak to us direct from that island nation on the other side of the world. Her research focuses on reproduction in male tuatara (*Sphenodon punctatus*). The title of Sarah's program will be "Reproduction in the Last of the Rhynchocephalians: Insights and Future Work." This talk will explore some of the unique aspects of their reproduction and briefly discuss the ongoing work to fill in major gaps in our understanding of this distinctive reptile.

Dr. Eli Greenbaum, professor of environmental science at the University of Texas at El Paso, will be the speaker at the May 26 webinar. Dr. Greenbaum is the author of *Emerald Labyrinth: A Scientist's Adventures in the Jungles of the Congo*. The title of his talk will be "Mambas, Malaria and Militias: 21st Century Herpetology in Democratic Republic of Congo."

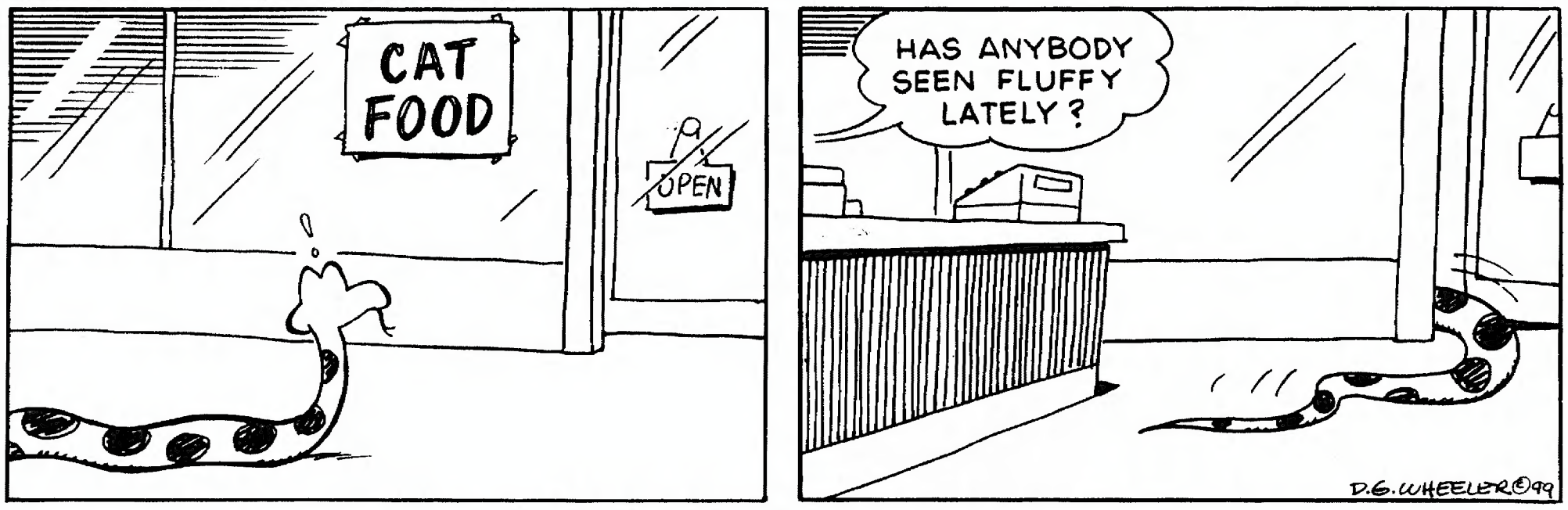
The June 30 webinar will be **Show & Tell**. The speakers will be you, the members of the Chicago Herpetological Society.

Please check the CHS website or Facebook page each month for information on the program. Information about attending a Zoom webinar can be found here:
<https://support.zoom.us/hc/en-us/articles/115004954946-Joining-and-participating-in-a-webinar-attendee->

Board of Directors Meeting

Are you interested in how the decisions are made that determine how the Chicago Herpetological Society runs? And would you like to have input into those decisions? The next board meeting will be held online. If you wish to take part, please email mdloogatch@chicagoherp.org.

THE ADVENTURES OF SPOT



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